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ABSTRACT

This guide describes a model for training teachers in a multi-disciplinary, multi-process approach to environmental education. The model was developed and evaluated over a two-year period. The guide documents experience with the model and points out suggestions for building an inservice program in environmental education that makes use of resources found in a local community. The guide focuses mainly on teachers of grades 4, 5, and 6, but has relevance for teachers at all grade levels. (Author/RE)

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CLASSROOMS AND COMMUNITY, A PROCESS GUIDE FOR TEACHER TRAINING IN ENVIRONMENTAL EDUCATION

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August 23, 1978

St. Louis Public Schools

Missouri Botanical Garden

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Foreword

The St. Louis Public Schools and the Missouri Botanical Garden recognize the importance of citizen awareness of their relationship to the environment and their responsibility for the demands that they individually and collectively make upon it. Each institution has its own constituency to be served, and each has its own goals and responsibilities, yet they share a common interest in educating people about their place in the environment and their role as citizens.

One of the objectives of the St. Louis Public Schools' environmental education program is to provide students with some basic understandings of the inter-relationships among ecosystems and local natural resources, to outline the inter-action of people and the urban environment, and to provide pupils with a means of assessing the environmental quality of their community.

St. Louis curriculum leaders recognize that this objective can be best achieved through the utilization of resources available in the community. Teachers are encouraged by curriculum specialists and inservice leaders to make use of local community institutions and agencies as a valuable resource not only for educating children, but also for purposes of teacher education.

St. Louisians are served by many civic, cultural, educational and governmental organizations and agencies. Many of these groups have a particular interest in educating children or teachers about environmental issues and concerns.

The leadership of the Missouri Botanical Garden have recognized a growing interest among these groups to contribute to the development of environ-

mental literacy among children and teachers, and also detect an increasing frustration over the lack of effective ways to reach this important audience. The Garden seeks to become a broker through which information about community resources can be transmitted to the school system's program in environmental education. The idea of the Garden as broker of information had its origins in the Garden's Ecological Services Department which was created in January 1973 to work on environmental assessments and prepare environmental impact statements. As a result, the Garden developed a network of relationships with experts from agencies throughout the St. Louis area. The success of the Ecological Services Department in organizing and coordinating the diverse contributions of these experts led to the idea that the Garden might be able to function in a similar fashion to serve school children and their teachers.

Thus, the school system and the Garden have similar commitments to environmental education and the utilization of community resources in the classroom. The school system's interest in the development of inservice training in environmental education dovetails with the Garden's interest in making a more meaningful contribution to school children and teachers.

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INTRODUCTION - PART I

This guide describes a model for training teachers in a multi-disciplinary, multi-process approach to environmental education. The model was developed and evaluated during a two-year cooperative program between the St. Louis Public Schools and the Missouri Botanical Garden. With funding provided by the U.S. Office of Environmental Education, the Environmental Education Teacher Training Project staff developed and implemented an inservice personnel development program for St. Louis Public School teachers.

The purpose of the guide is to document our experiences and point out some pathways for building an inservice program in environmental education that makes use of resources found in a local community. Although the St. Louis program focused mainly on teachers of grades 4, 5, and 6, our experience has relevance for teacher inservice at all grade levels. It is the *processes* of training that make up our model, together with the procedures and techniques which we found workable that constitute this guide.

The guide consists of two sections. Section I describes the structure of the model and presents a general discussion of the project's goals and the mechanisms for carrying them out. Section II is a case history approach to the development and application of the model. Material presented in this section illustrates the strategies and techniques which we found to be effective in implementing the model.

Section I - THE MODEL

A. Goals of the Model

The model developed by the Environmental Education Teacher Training Project is based on the following goals:

1. to develop an institutional partnership between a school system and a community institution for the purpose of designing and implementing a training program in environmental education:

2. to utilize community resources in environmental education;

3. to train a cadre of classroom teachers who would conduct inservice training and serve as resource people in their school district;

4. to develop ways to integrate environmental education into the total curriculum.

B. Components of the Model

Goal 1 The partnership

The institutional partnership between a school system and a community resource is the foundation upon which the model is built. Whether the community resource is a botanical garden, a city agency, a museum, or an association of members, the partnership must be founded upon mutuality of goals and interest if the training program is to succeed as a collaborative effort.

Once these have been identified, each of the partners must participate fully in setting objectives, making decisions and creating new ways to use the resources of the community. By pooling the resources of two institutions and capitalizing on their respective areas of expertise, both organizations are able to make a greater contribution as partners than each could do alone.

Certain conditions appear to be essential to building the kind of relationship which enables each institution to be a full partner in designing and implementing a cooperative training program:

1. Each institution has unique resources and capabilities which should be identified and utilized.

2. The management design of the program should encourage the staff to work as partners, even though they are employed by individual institutions.

3. The project staff should know the internal organization and management of each institution and the chain of command.

4. The staff should recognize that each institution plays a different role in the community and therefore may have different limitations and restrictions.

5. It is essential that lines of communication be established among staff members, teachers and all others involved in the training program.

6. Finally, great care should be given to informing people within the partner institutions who are not directly involved in the training program. This is important if the training program is to receive the support of both institutions.

Goal 2 The Consortium

The consortium is an ad hoc group of local civic, cultural, environmental, educational, and governmental organizations and agencies which have environmental education resources. The consortium's role is to assist the project staff in developing ways for teachers to utilize community resources in their classrooms.

The consortium can serve the training program in three major capacities - advising, training and evaluating. As advisors, the members of the consortium can assist the project staff in conceptualizing, planning and evaluating the training program. As trainers, members of the consortium can assist the project staff in providing content and process activities for the training program. As evaluators, members of the consortium can assist the project staff in designing the evaluation plan, data collection and preparing summaries and recommendations.

Community resources in environmental education can be used in the following ways.

a. Learning environments for students;

Programs and presentations conducted at the agency's facility are usually associated with museums, parks, botanical gardens, historic houses and farms. There are a number of difficulties that teachers may encounter as they attempt to use these resources. If community agencies are to be successful in providing supplementary learning environments, it is important that they be cognizant of some of the constraints under which the urban teacher must operate. For example, setting up an appointment to visit the site must be a relatively easy procedure since teachers have limited access to telephones during the school day. An institution that wants maximum utilization of its site must have a workable appointment procedure and be flexible enough to accommodate transportation constraints which are beyond the control of the individual teacher.

Information for teachers must be accessible, accurate, current, and thorough. Teachers need to know the specific kinds of programs, materials, and consulting help that are available. Institutions should provide scheduling information early in the school year regarding formal programs and offerings for students. The institution must sincerely desire groups of children to visit its facilities. This means the institution must have a place where students can eat sack lunches, wait for their bus, and store their coats and purchases. It is important, too, that sufficient restroom facilities be available. Also, the institution should design a program which is appropriate for the interest

level of children and which permits tactile interaction. This does not mean that children have to touch everything in a museum or pull up plants in a botanical garden, but some provision should be made for children to touch and feel and interact with the learning environment.

The most important single factor is the attitude of staff persons who will be in contact with the children. These people must be genuinely interested in relating to children and sensitive to their needs.

b. Providing teacher training and curriculum development;

Community resources are most effective in teacher training and curriculum development when resource people decide for themselves the level and scope of their involvement. If a consortium of community organizations is to make a contribution in this area, it is important that care be given to identifying the target group to be served, the specific needs of the target group and the specific kinds of input desired from consortium members.

Once a group of resource people have been identified to participate in specific teacher training and/or curriculum development activities, they need to be provided with a framework for their involvement. Participants should share a common understanding of the overall goals of the activity. In addition, they should be aware of the expectations in terms of process and product, and they should develop an explicit schedule for accomplishing the work.

Goal 3 The Training Program

To prepare a cadre of qualified teachers to conduct workshops and serve as resource people requires that indepth training be provided on a continuing

basis. Teachers must acquire a philosophical understanding of environmental education and must also learn some practical skills for incorporating it into the curriculum. Often, teachers will need to learn some new content material.

A summer institute, followed up during the school year by one-day workshops and classroom visits by project staff provides a workable format for providing indepth and continuing training. The topics covered during the institute should be selected by staff and consortium members, and the follow up work should be a response to training needs identified by teachers.

A suggested schedule of training is as follows:

Year I

1. Summer institute (one or two weeks)
   Topics:
   a. a conceptual framework of environmental education;
   b. infusing environmental education into the curriculum;
   c. developing awareness of the relationship of people to the natural world;
   d. values and their relationship to environmental decisionmaking;
   e. governmental resources and procedures regarding environmental issues;
   f. school yard ecology;
   g. resources for teachers in the local community.
2. Follow up workshops to respond to training needs identified by teachers;
3. On-site assistance.

Year II

1. Summer institute to give teachers skills in how to design and conduct workshops.
2. Follow up workshops to respond to training needs identified by teachers.
3. Experience in conducting workshops for other teachers.

Goal 4 The Mini-Units

The training activities should prepare teachers to view environmental education as a comprehensive approach and to integrate this attitude into the regular curriculum. A good way to assess whether the training is effective is to require teachers in the program to design two or three mini-units and to pilot-teach them in their classrooms.

Teachers are more likely to do the necessary independent research and reading when they are free to choose topics they consider important. The project staff and consortium members can assist in the development of the units by locating readings and other resources, suggesting important concepts to be taught, and identifying ways that community resources may be used.

The staff may wish to identify some concepts as "basic" and which should be included in all of the mini-units. These concepts could include:

1. all components in the biosphere are interdependent
2. all life is dependent upon solar interaction
3. human life is dependent on plants

There are several reasons why teachers should be required or encouraged to make written record of their mini-units:

1. The staff is better able to identify areas where teachers may need additional help.

2. Teachers are better able to share their work with one another.

3. Ideas are less likely to get lost or forgotten.

Most importantly, the mini-units make up the substance of the workshops that later will be conducted by project teachers. The written documentation of classroom activities becomes a valuable resource for planning these workshops. The written record for each mini-unit should include:

1. Topic
2. Student Objectives
3. Classroom Activities
4. Criteria for assessing whether objectives are achieved.
5. Community resources utilized. (If relevant, the name and phone number of contact person.)

C. Procedures

Project Management Design

The management approach is the cement that holds the model together. It is important that the administration of the project reflect the partnership aspect of the cooperating institutions. Each institution should bear equal responsibility for directing and carrying out the work of the project.

One way to do this is to administer the project through two co-directors, each being drawn from one of the partner institutions. The rest of the project staff should be balanced in a similar manner, with duties and responsibilities shared equally. It is important also that each institution provide office and work space for the project as a way to minimize the possibility that one of the institutions might begin to dominate. In addition, staff meetings should be scheduled on a regular basis. In short, in setting up the administration of the project, great care should be taken to assure that each institution shares equally in shouldering the work as well as in making decisions. Such equality of commitment permits both institutions to serve as full partners without one becoming dominant.

Staff selection

The notion of partnership between two institutions has implications for staff recruitment. Both institutions should work together in developing job descriptions and selecting staff. Also, it is important that staff members realize that, in essence, they are employed in both institutions and therefore, should become knowledgeable about the goals and policies of each.

Teacher recruitment

Allow sufficient time for this phase of the program activities. If the training of teachers is to begin in the summer, for example, recruitment efforts should be underway in early spring.

Avenues for recruitment could include:

1. placing notices in in-house bulletins
2. contacting principals and other administrators;
3. contacting teacher organizations;
4. placing ads and articles in local and neighborhood newspapers.

In recruiting teachers, it is important to be specific about what they will be expected to do. This minimizes the likelihood that teachers will drop out of the program because of misunderstandings about their roles. Teachers should be told the goals of the project; also, they should be told:

the number of days they will attend workshops in the summer,
the number of days they will be released from the classroom, and
the nature of work assignments.

In addition, they should be told that they will be expected to develop their own classroom programs and to design and conduct workshops for other teachers.

Teacher selection

Teachers should be selected to participate in the project on the basis of criteria established jointly by the partner institutions. This could include:

1. commitment to program goals;
2. interest and creativity regarding environmental education;

3. experience and prior preparation;

4. geographical distribution;

5. grade level;

6. support of their school principals.

The partner institutions must decide also how many teachers can be accommodated. A group of 20-30 people appears to be a workable number. More than that number may present management problems; less than that results in too few teachers being trained to make much of an impact. Because teachers will be called upon to work far beyond their normal expectations, the project will have greater likelihood of success if teacher participation is voluntary.

At the time of selection, it should be clear to applicants that they will be expected ultimately to conduct workshops in environmental education for other teachers in their school, district and, perhaps, outside their district. Further, applicants should know that as part of their preparation for this role, they will be expected to read and become familiar with a body of literature, develop activities for use in their classrooms, attend a specified number of training sessions and design and conduct workshops for their colleagues. Attention to these matters during the initial selection process gives greater assurance that the teachers selected will devote sufficient time and effort to the training program and minimizes the likelihood that some will drop out because of the heavy work load.

Organizing the Consortium

Steps for organizing the consortium include:

1. generating a list of persons and organizations in the community that have some kind of commitment to environmental education;

2. explaining as specifically as possible the purpose of the program to all prospective consortium members;

3. inviting interested parties to a meeting where they can identify the resources they have to offer and the nature of the kind of commitment they can give to the program;

4. assembling a directory of participating institutions and their resources for distribution among teachers.

In order to provide maximum opportunity for consortium participation in the training program, the leadership for the consortium should remain with the partner institutions with roles and tasks being defined by the program staff. Also, voluntary participation is a must if the consortium is to be effective. The staff should avoid coercing or manipulating the activities of the consortium members; instead they should put consortium members to work in those areas in which they themselves have identified an interest.

In organizing the consortium, great attention should be given to identifying not only the appropriate community agencies and institutions, but the specific individuals within those organizations who have an interest in working with teachers to enhance environmental education in schools. Wherever possible, consortium members should be recruited as individuals who represent their organizations and who are willing and able to commit their personal and organizational resources.

Guidelines for consortium recruitment are similar to those for teacher recruitment. Be specific about purpose, role, tasks and time required.

Consortium members should be told that the purpose of their group is to assist in a training program for teachers. Their role is to serve as advisors, plan and conduct workshops for teachers, identify important concepts to be taught, give assistance in developing activities for students, help teachers use the resources in the community, locate expert information on environmental topics and give feedback to the staff about perceived needs and problem areas in the training program.

D. Program Implementation

There are three kinds of activities that constitute the implementation of the training program: staff activities, teacher activities, and consortium activities.

Staff Activities

The staff's primary role during the first year of the program is to help teachers develop a multi-disciplinary approach to environmental education and to provide training that will help them design activities for their students that reflect this approach. During the second year, the staff's primary role is to provide opportunities for participating teachers to plan and conduct workshops for other teachers.

The process that the staff uses to select and structure appropriate activities for teachers whould have as its chief characteristic responsiveness to teacher needs. The staff's activities should be governed by the following process:

1. identifying the needs of participating teachers;
2. planning activities to meet those needs;
3. evaluating activities in terms of their effectiveness in meeting identified needs.

Throughout the program, the staff should work on all of these tasks concurrently to fashion a program that will continue to adapt to the needs of the participants as those needs are modified and changed over time.

Teacher activities

The teachers' primary role is to acquire sufficient expertise to be able to conduct workshops and other training activities for their colleagues. It is expected that teachers will conform to the program goals:

1. to develop an inter-disciplinary approach to integrating environmental education into the curriculum;
2. to use community resources in providing learning experiences for students;
3. to structure environmental education activities around urban themes.

As part of their preparation in becoming teacher trainers, teachers should:

1. become knowledgeable about the environmental issues which are important to their community;
2. construct a definition of environmental education and a rationale for its inclusion in the curriculum;
3. become familiar with the literature on environmental education;
4. identify desired learning outcomes for their students;
5. design and teach inter-disciplinary materials and programs;
6. learn techniques for planning and conducting workshops;
7. design and conduct workshops and other training activities for teachers.

Consortium activities

The consortium's primary role is to assist the staff in providing training opportunities for teachers and to assist teachers in providing learning opportunities for their students.

The extent to which consortium members become involved in the program is

the function of what they have to offer and what they are asked to do. Some of the ways that consortium members may participate in the program include:

1. advising;
2. planning;
3. conducting training sessions;
4. securing resource material;
5. assisting teachers in developing curriculum and classroom activities;
6. collecting evaluation data;
7. providing information about local issues and resources.

There follows a suggested step by step procedure for implementing the program:

CALENDAR OF PROJECT ACTIVITIES

Prelimary Activities

1. Identify partner institutions and their roles and responsibilities to the program.
2. Select project directors and other project staff.

Program Activities - Year I

	STAFF	TEACHERS	CONSORTIUM
1.	Recruit teachers		
2.	Organize consortium		
3.	Select teachers		Assist in teacher selection
4.	Conduct literature review and select readings		Assist in locating readings
5.	Plan initial training activities (Summer institute - orientation)		Assist in planning
6.	Distribute readings to teachers	Read assigned readings	
7.	Conduct some of Summer Institute Sessions	Attend Summer Institute (orientation) (summer - 2 weeks)	Conduct some of the training sessions Provide materials and resources
8.		Construct a personal definition and rationale for environmental education (workshop activity)	
9.		Identify desired student outcomes (workshop activity)	

	STAFF	TEACHERS	CONSORTIUM
10.	Collect and analyze data to assess future training needs of teachers.	Provide feedback through questionnaires and conversation	Assist in data collection
11.		Design and teach inter-disciplinary materials and programs in their classrooms (on-going activity).	Assist in developing programs and activities. Provide materials and resources.
12.	On-site visits to teachers' classrooms (as necessary in response to teachers' needs).	Request staff visits.	
13.	Plan consortium meetings - as necessary in response to teachers and staff needs.		Consortium meetings, seminars (as needed).
14.	Plan first Follow-Up Workshop to meet teachers identified needs.		Assist in planning Follow-Up Workshop
15.		Attend Follow-Up Workshop	Conduct workshop Provide materials and resources
16.	Collect and analyze data to assess future training needs of teachers.	Provide feedback through questionnaires and conversation.	Assist in data collection
17.	Repeat steps 14-16 as needed.		

Program Activities - Year II

	STAFF	TEACHERS	CONSORTIUM
18.	Suggest format for workshop to assure consistency with program goals	Plan workshop to present to other teachers	Assist in planning workshop Provide materials and resources
19.	Conduct training sessions to help teachers design workshops	Attend training sessions - Summer, 1 week	
20.	Collect and analyze data to assess future training needs of teachers		Assist in data collection
21.	Conduct additional sessions, as needed. (These should include opportunities for role-play.)	Attend training session	
22.	Locate opportunities for teachers to present workshops.		
23.	Collect and analyze data from workshop attendees to assess workshop effectiveness.	Present workshops to other teachers.	Assist in data collection
24.		Revise workshop on the basis of data from attendees.	

INTRODUCTION - PART II

The Environmental Education Teacher Training Project began in July 1976 with funds provided by the U.S. Office of Environmental Education to the St. Louis Public Schools. The co-directors of the project were Edward Ortleb and William Klein. Both held a long-term commitment to environmental education and both had worked for several years within their respective institutions to honor that commitment.

Edward Ortleb, Science Supervisor for the St. Louis Public Schools, was responsible for incorporating environmental education into the science curriculum in all grades of the city's public schools, and in addition worked with teacher committees to write goals, objectives, and activities for environmental education. At the time the project was planned and implemented, William Klein was Assistant Director of the Missouri Botanical Garden and was vitally involved with the Garden's entry into environmental assessment and public education on environmental topics.

Together, the project directors conceived of the Environmental Education Teacher Training Project and were responsible for the initial planning. The project reflected their philosophies about environmental education, and project goals were constructed within this framework.

Section II - CASE HISTORY

A. The Administration of the Partnership

1. Project Management Design

The project's management design reflected the partnership between the two institutions. The staff was made up of four people drawn from the two partner institutions as illustrated below:

Staff meetings were held on a regular bi-weekly basis with additional meetings as needed. Major project activities were discussed in these meetings and decisions were made through consensus rather than by votes. There were no topics off-limits to the total staff and no areas in which one of the partner institutions felt uncomfortable about participating. Both project directors, for example, made decisions about budget expenditures, even though the St. Louis Public School system was the recipient of the grant award. Also, the project's Garden staff participated on an equal basis to plan activities for teacher training and curriculum development, and the School staff acted similarly to

generate strategies for consortium involvement. At no time were decisions made unilaterally about any project business and at no time were plans put into action without first attaining group consensus. Shortly after the project managers were hired, a rapport developed among the project staff. The regular meetings became creative brainstorming sessions in which managers and directors felt comfortable with an active exchange of ideas, critiques, plans, and philosophies.

The project managers played a key role in the development and implementation of the teacher training model. They carried out project activities, interacting with teachers and consortium members as they attended to the day-to-day operations. The project managers were responsible for:

planning and conducting workshops and other training activities;

assisting teachers in developing, implementing, evaluating, and modifying curriculum units for use in their classrooms;

coordinating consortium involvement;

collecting evaluation data.

2. Staff selection

The co-directors decided during the planning stage of the project that the partner institutions should participate equally in the hiring of the two project managers. Thus, when the Garden manager was being selected, Ortleb served on the Garden's personnel screening committee and participated actively in the interviewing of candidates. Conversely, Klein had an identical function in the hiring of the School manager.

The project manager positions were advertised through the respective personnel recruitment procedures of the St. Louis Public Schools and the Missouri Botanical Garden. This included posting the position on bulletin boards at the Garden and advertising in the weekly newsletter sent to all schools in the St. Louis system. In addition, the positions were listed with placement offices of local colleges and universities.

For these positions, background, experience, and the staff member's philosophy of education were considered equally important to education credentials. They had to have demonstrated an ability to plan, manage, and coordinate programs. Also, it was essential that they have an interest in promoting the philosophy that environmental education belongs in every area of the school's curriculum and be committed to the idea of utilizing the community's physical, human, and institutional resources.

Peggy Rustige was hired as the project manager for the St. Louis Public Schools; Calla Smorodin as the project manager for the Missouri Botanical Garden. Each of the project managers had a background of training and experience in innovative educational settings that qualified them for these positions.

Mrs. Rustige pursued her Master Degree through the Washington University Experienced Teacher Fellowship Program and the TTT Program (Trainers of Teacher Trainers). The programs specialized in preparing teachers to become "change agents" stressing innovative teaching strategies, curriculum development, supervision techniques and research methodology. She has had experience in teaching grades K-8, curriculum development, elementary administration and

remedial reading. She has planned and implemented alternative learning programs and conducted inservice training for system teachers.

Ms. Smorodin came to the project with a background in teacher training, curriculum development, environmental education and community organization. She worked in the Washington University Elementary Social Studies Project, a curriculum project which had a significant training component. Also, she served as community liaison with the Washington University TTT program. Her work in environmental education included directing a curriculum development project and a community education program for the Committee for Environmental Information. In addition, she served on a statewide committee to develop Missouri's state plan for environmental education.

B. Utilizing Community Resources

1. Organizing the Consortium

The consortium was designed to be composed of institutions in the St. Louis community which have resources to offer educators in environmental education. Its primary function in the project was to develop that part of the training model that relates to the utilization of community resources. The first task in organizing such a group is to identify the persons and organizations which have some kind of commitment to environmental education. The project staff met early in the summer to brainstorm a list of possible consortium participants.

The list primarily reflected personal and professional ties of staff members and the partner institutions. For example:

> the Garden's Ecological Services Department had worked closely with persons in the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency;
>
> one of the project managers had worked with several local environmental groups;
>
> one of the co-directors was an officer in the local chapter of the Audubon Society and several teacher organizations;
>
> the Garden was an active participant of a monthly sharing session of all the education directors of the local cultural institutions.

The brainstorming yielded a list of 40 institutions and agencies. A letter was sent to representatives of each of these institutions explaining the purpose of the project and inviting their attendance to the consortium's first

meeting early in August. (See appendix.) In most cases, we directed letters to individuals whom we knew had an interest in environmental education. Sometimes this resulted in covering an institution twice; i.e., sending a letter to two or more persons within a given organization. It turned out to be well worth the extra postage for so much of how an institution's resources get used are a function of the interest and devotion of specific individuals within that institution. Representatives of 23 of the institutions attended the meeting; representatives of 15 additional institutions indicated a desire to participate at future meetings. Only two institutions declined to participate in the project.

Our attempts to include the business community were disappointing. Representatives of business did not decline to participate, but neither did they play an active role. The reasons became apparent late in the project -- we had made contact with the wrong people in those organizations. None of the staff had a great deal of experience working with the business community and we made an assumption that the best way to get involvement from businesses was to contact a high level executive. In several instances, the executive indicated that the company had an interest in environmental education. We made the error by not pressing for the name of a specific individual for us to contact. We found out quite late in the project that we should have been contacting people in the public information offices of large corporations.

In reflection, it may have been a good idea for recruitment of consortium members to be an on-going activity. Staff time for this effort could have been

minimized by asking a small group of consortium members to take responsibility for seeking out and identifying potential members.

The first meeting of the consortium was held about three weeks prior to the summer workshops for teachers. It consisted of a three-hour session, carefully planned by the staff so as to give consortium participants a full and accurate picture of the purpose of the project and the expectations for community involvement. All of the project staff participated in running the meeting. This gave the consortium participants an opportunity to come to know the full staff in the hope that lines of communication would be developed to all staff. We wanted to avoid a situation where one staff member was identified to "handle" the community resources.

The staff made presentations to explain in detail the following areas:

1. background of the project;
2. administrative structure of the project; i.e., the School-Garden partnership;
3. goals of the project;
4. role of the consortium.

Each participant was given a copy of the proposal. The goals of the project were set out and projections were made about project activities during the school year. It was explained that we wanted the consortium people to help us develop ways for teachers to utilize community resources for the purpose of building environmental education into their curriculum. Specifically, we wanted people to advise the project staff, conduct training workshops, and to help in the evaluation of the project.

Participants were asked to declare whether they had an interest in participating in the consortium and to fill out a questionnaire outlining the kinds of resources available from their respective institutions. The questions asked were:

1. In what ways do you think your organization might participate in this project?
2. What kinds of specific activities/resources of your organization can be related to environmental education?
3. Are there specific times of the year when it is more convenient for your organization to participate?

The questionnaire also asked for names of other people and organizations that should be invited to participate. Also, we requested copies of brochures and literature for distribution to project teachers.

Twenty-three questionnaires were completed which yielded five categories of available resources: (1) workshops, (2) materials, (3) books, (4) film slides, and (5) consultants/speakers. A chart was made up displaying the available resources, distributed for review to consortium members, and then to project teachers. (See Appendix for names of institutions that participated in the consortium.)

In the initial meetings, we felt it was very important to be as specific as possible about our expectations of the consortium and the kind of role we believed it could have in the project. This meant, of course, that the staff itself had to clarify its position on this issue. Too often, lip service is given to the importance of community involvement with little attention paid

to who is the community, what does involvement mean, where is the focus of leadership, when is involvement appropriate, and how will the community make its impact felt. We did not go into the first meeting with complete answers to all these questions, but we did attempt to communicate the focus of our plans. As far as "who" makes up our community component, we invited the participation of any group which had an interest in furthering environmental education in the city schools.

Leadership for the consortium's involvement remained with the project staff. It was the project staff who was responsible for selecting the target group of teachers to be trained, identifying the needs of the target group, and designing a program to meet those needs. The staff did not attempt to build an organization out of the consortium or to suggest that some of its members take on tasks of arranging meetings or defining an organizational structure. The project staff took responsibility for convening the group and defining the tasks that needed to be done.

2. Consortium activities

During the project, members of the consortium participated as advisors, planners, workshop leaders, and curriculum consultants, and they assisted in collecting evaluation data. In addition, consortium members were extremely cooperative in supplying printed brochures and other materials available through their organizations. Audio-visual materials and simple classroom equipment were loaned to project teachers free of charge. Some of the consortium organizations such as the American Lung Association of Eastern Missouri

and the Missouri Department of Conservation have available educational materials for use in the classrooms. Most of these groups viewed our project as an additional avenue of dissemination for their programs. Other groups such as the Ozark Chapter of the Sierra Club and St. Louis Coalition for the Environment provided project teachers with complimentary copies of their regular publications. Another category of consortium groups, such as U.S. Environmental Protection Agency, Army Corps of Engineers, and *Environment* magazine researched their files to supply project teachers with information on specific topics.

Another important area of involvement was that of dissemination and publicity. Just as our project served to assist in the dissemination of others' programs and materials, the consortium was very instrumental in our dissemination efforts. Consortium organizations such as *Environment* magazine, Ozark Chapter of the Sierra Club, and St. Louis Coalition for the Environment carried articles about the project in their publications to subscribers and members. Others, such as the American Lung Association and St. Louis University included staff people on programs and forums to give us additional opportunities to spread information about the project.

By Spring of the first year, we noticed that the consortium meetings had become sharing sessions for all members. Meetings, events, programs, and activities of the member groups were announced and brochures and literature were handed out. Most important, however, we noticed that consortium people had expanded their contact with other organizations and were calling on their consortium colleagues to lead workshops, seminars, and forums and bring to

their own organizations an expanded knowledge base, a different viewpoint, or a new perspective.

3. Teacher training workshops

The project staff relied heavily on the willingness of the consortium to contribute their time and expertise for planning and conducting workshops as part of the training provided to project teachers. In this area, as in all other activities involving the consortium, planning is a key to success and the staff allowed at least four weeks for this activity.

During the planning stage of a given workshop, the staff specified the objectives of the workshop and the teacher needs it was designed to serve. Consortium members who had identified themselves or others in their organizations as potential workshop leaders were contacted and asked to specify the kinds of presentations with which they feel comfortable. This is an important step if teachers are to come away feeling they have gained needed skills and/or knowledge. A workshop will not be successful, for example, if its purpose is to give teachers a knowledge of specific air pollutants in the St. Louis area and the leader wants to talk about air pollution in general.

Once the workshop leader has been selected, the staff must sit down and plan with that person. The workshop leader needed to know the following:

1. The expectations of the teachers. Are they attending for the purpose of gaining information on a given topic or to learn skills for acquiring information?

2. The length of time available. Be honest about the other activities that are planned, such as circulating an evaluation instrument or filling out papers required by the

> administration for inservice attendees. Most workshop leaders plan their time right down to the wire (and many of them go into overtime) so you are courting disaster if you try to shave half an hour as the workshop in going on.

In addition, is is useful to ask the leader to state the objectives of the workshop at the beginning of the presentation. It helps to write them on the board or newsprint pad. One of our most successful workshop leaders did this, then turned to the group and said, "Here's what I'm here for. Is this what you want from this session?" This kind of checking things out at the beginning proved very helpful to both the leader and participants.

In all of the planning, the staff did not try to control the content material to conform to our own views, nor did we demand that the presentor strive for a "balanced" or "unbiased" presentation. We did ask that the leaders identify their biases and to explain to teachers the reasons for their positions. For example, one workshop was designed to illustrate governmental decisionmaking on environmental issues. Dr. David Bedan presented the Meramec Dam controversy as a case history. He was clearly opposed to the government's decision to build the Dam and he presented refutations of the government's case. Bedan had worked closely for years with the Ozark Chapter of the Sierra Club and St. Louis Coalition for the Environment to challenge the government in court and in the voting booth. In essence, the point here is that the staff must trust the expertise of the leaders they have selected and must respect the integrity of these people in terms of their viewpoints on environmental and educational issues.

4. Teacher seminars

The consortium provided teachers with information and help in organizing the mini-units. This was done in seminars which were organized in response to teachers' needs. It is useful, we believe, to explain how the seminars happened to come about, for they illustrate a way that community resources can be used to enhance and expand the preparation of teachers. One of the assumptions upon which the project is based is that there is a wealth of knowledge in the community that is not being tapped by the school sector. It was a goal of the project to seek additional ways to transfer knowledge from community experts to the school curriculum. At the conclusion of a training workshop on curriculum development, the project teachers felt that the session had been helpful in terms of general curriculum construction, but that they still needed assistance in formulating specific concepts to be taught and identifying appropriate content areas.

The consortium was called in for a one-half day brainstorming session. At this meeting, it was explained that as part of the program, teachers were to develop mini-units and teach them in their classrooms. Also, the staff explained briefly the following components of curriculum: (1) rationale, (2) objectives, (3) activities and (4) evaluation. Some sample pages of curriculum materials were distributed to give the audience an idea of the kind of product each teacher would come up with. The format we chose is one that is familiar to all students in schools of education, consisting of four parts, (1) supporting concepts, (2) performance objectives, (3) activities, and (4) evaluation.

Once the teachers' task had been explained and the end product described, the task for the consortium members was to identify objectives and activities and resources in four topic areas: pollution, transportation, plant and animal relationships, and recycling. It was explained that objectives should be framed toward building basic ecological concepts in students. The basic concepts of ecology were borrowed from Barry Commoner's book, *Closing Circle:*

1. There is no such thing as a free lunch.
2. Everything must go somewhere.
3. Nature knows best.
4. Everything is connected to everything else.

The participants were divided into four groups. One person from each group was asked to be a group leader responsible for recording the group's recommendations and to report back to the larger group. Thus, it was understood that some product was to be developed by each group and presented later to the larger group. The groups were told the amount of time they would have to work and were told a specific time the larger group would reconvene. The groups worked for over an hour. During the discussion time, more brainstorming took place. Later the products of the meeting were typed and distributed to teachers. The staff felt that the reasons for a successful brainstorming session were:

1. The group (and project staff) shared a common conceptualization of the task and the product. As with the earlier consortium meeting, the staff had held indepth planning meetings in which the brainstorming agenda was gone through in specific detail. Not only were the procedural details discussed, but the substantive areas were discussed and clarified among project staff. At the consortium meeting, the staff were well prepared, sharing the

same conceptualization and were able to make a clear, concise presentation.

2. Participants shared a common understanding of the goals of the project and the context in which the immediate task fits.

3. Participants were told what expectations were sought in terms of process and product and the schedule for accomplishing the work was made explicit.

4. An individual within each group was identified as a leader and was given responsibility for reporting on the group's work.

Teachers were not present at this meeting. In reconsideration, the teachers should have been there, but at the time we did not predict that the process itself would be one that the teachers would have found useful. The brainstorming sessions were helpful to teachers in that objectives, activities, and resources were identified. However, many expressed the need for more substantive information in their topic areas. In response to this need, the staff organized four after-school seminars in which teachers and consortium members came together to develop concepts and activities for the mini-units. The entire process, from brainstorming sessions to seminars, we feel is one that is especially helpful for utilizing community resources in terms of curriculum development and also can be replicated with ease in any training program.

C. Training the Teachers

1. Teacher recruitment

In the St. Louis project, teacher recruitment activities began in the Spring of 1976, two weeks before the end of school. The school system's internal communication mechanism was the initial route by which teacher recruitment efforts took place. Announcement of the program was made to all school system personnel via the system's weekly newsletter. In addition, announcements and applications were sent to each of the system's elementary schools. (See appendix.) Teachers also received announcements of the program along with a special letter sent by the Board of Education to all employees listing available positions for the coming school year.

Ed Ortleb, the project co-director from the St. Louis Public Schools, followed up the announcement with personal contact to all the curriculum specialists in the system to inform them of the program and to enlist their aid in recruitment.

Response to these recruitment activities was disappointing; by July 1, only a handful of teachers had applied for the program. Two factors appear to have been the cause:

1. Our initial announcement to teachers coincided with the end of the school year. Teachers, administrators and curriculum specialists were busy attending to a myriad of details that go with closing school for the summer; and

2. Teachers were reluctant to apply for the program because of their uncertainty about possible re-assignment for the fall semester. During the summer months major court-ordered transfers were to be made to bring staffs into racial balance.

By mid-summer the recruitment efforts had failed to generate interest among teachers. It was then that the staff conceived of the activity that later proved to be our major source of applicants -- placing a classified ad in the city's major newspapers. Over 80 teachers employed in the St. Louis Public Schools made an inquiry about the program in response to the ad; 44 of these subsequently made written applications.

Teacher participation in the project was voluntary. The staff avoided selecting teachers via the route of having the principal choose a "volunteer." The only inducement given to teachers was that they would be paid a stipend for the days they attended workshops in the summer. The stipend was paid at the standard rate set by the Board of Education. No college credit was given for participation in the project.

In early August, teacher applications were reviewed by a committee consisting of the project staff and representatives of two consortium institutions. Criteria for selection included:

1. creativity
2. specific reasons for applying to the program
3. experience in environmental education
4. teaching philosophy

Teachers were also selected to give a geographical distribution across the city. The St. Louis Public School system is divided into 5 decentralized administrative districts. Four teachers from grades 4, 5, and 6 were selected from each of the 5 districts to be project participants. To assure the greatest

distribution across the city, it was decided to limit teacher selection to no more than one teacher from a given school. Late in the summer after the project teachers had been selected and received some training, a few teachers were reassigned by the school district. The result of this was that two schools each had two project teachers. Another result of reassignment was that two teachers were no longer teaching grades 4-6. One was now teaching first grade and the other a class of EMR (educable mentally retarded) children.

After the first year nine teachers decided not to participate in the second year of the project. The reasons were varied -- personal, family, and professional. Two teachers were reassigned to new grade levels requiring much planning time; two teachers began Masters programs; two cited personal and family reasons; one left the system; one felt the project required too much extra work; one was involved in another project in her school; and one was uncomfortable in the role of teacher trainer.

2. The training program

Year I

Summer Institute: Teachers were given stipends to attend a series of seven workshops which were held during the two-week period prior to the beginning of the school year. As part of the planning for the summer workshops, the project staff conducted a literature review to select appropriate readings which were distributed to project teachers in advance of the workshops. These materials were intended to define environmental education as an inter-disciplinary approach to teaching about the people-environment relationship and to

discuss the concepts and content desirable in a sound environmental education curriculum. It was felt that the readings would stimulate teachers to begin formulating a definition for environmental education and constructing a personal philosophy about what should be taught and why.

The summer institutes and the readings that were distributed prior to and during the sessions were intended to give teachers some philosophical background in what environmental education means to several groups of educators and some reasons and methods for its incorporation into the curriculum.

Because the consortium was organized early in the summer, the staff was able to tap into a large and valuable pool of resources for help in planning and conducting the summer institutes. (See appendix for agenda.)

That the teachers were responsible for curriculum decisions was a recurring theme throughout the training program. The staff made no attempts to dictate to teachers the content or the methods for their environmental education programs. As part of their first year's work, all teachers were required to develop at least two mini-units for their own classrooms. We requested that they be written down and turned over to the project staff. This was one more way to let the staff know the kinds of help that teachers might need. Such a requirement served as an added encouragement to teachers to develop their own programs. The single incentive used to get teachers to prepare units was that one of the project co-directors, the Science Supervisor for the school system, indicated willingness to include some of the mini-unit material in the revised Science Curriculum Guide for the coming year. A few teachers found this to be

burdensome; most of them, however, submitted a written version of two (or more) mini-units they had developed and taught in their classroom.

Follow-up workshops: Four follow-up, one-day workshops were held during the first year: one in October, December, March, and June. Where possible, we conducted these programs on regularly-scheduled inservice days. In addition, an after-school meeting of teachers and consortium members was held in November at which time four seminars took place concurrently.

The follow-up workshops and seminar were planned by the staff and consortium people to respond to needs identified by teachers. During the first year, the teachers' needs divided into two categories. Roughly, before Christmas, they needed help with the mini-units; after Christmas, they began to think ahead to the following year when they would be conducting workshops for teachers.

The October workshop focused on curriculum development and learning theory. To lead this workshop we tapped the staff of the St. Louis Public Schools. Tim Tomlinson of the Division of Planning and Program Development has an extensive background in teacher training and curriculum development. He presented a full-day program to provide guidance and assistance to teachers as they developed their individual mini-units.

Most of the workshop dealt with curriculum construction and emphasized the importance of clarity when stating rationale or goals, specificity when formulating objectives, consistency when developing activities, and validity when assessing learning outcomes. In addition, Tomlinson demonstrated ways that teachers could use existing text materials in social studies as a point of de-

parture for expanding lessons to include an environmental education focus.

The December workshop was devoted to acquainting teachers with some of the facilities available in the St. Louis community and to identifying ways in which they could be used within the context of an environmental education program. The workshop consisted of visiting three sites: the St. Louis City Water Works; the Cahokia Mounds Museum and State Park, Cahokia, Illinois; and the U.S. Park Service Westward Expansion Museum located at the base of the Gateway Expansion National Monument, commonly known as the St. Louis Arch. Consortium participants from the Cahokia and Westward Expansion Museums conducted sessions to identify ways their sites could be used within an inter-disciplinary environmental education program.

The March workshop was used for additional training in curriculum development, along with some rudimentary aspects of conducting workshops in a teacher inservice program.

A frequent question in staff meetings was whether three days spread throughout the school year were sufficient to provide teachers with adequate training. The goal of the project was to develop a model that could be replicated in other school systems and the staff believed that the large expenditure of money to release teachers from classrooms would prohibit replication. The cost of three training days could be absorbed by most school systems by using inservice days.

Initially, the cost factor was the only reason for limiting the number of training days. As the project went on, however, another and more important

reason emerged. The participating teachers resisted encroachments on student contact time. The teachers worked very hard on this project and put in long hours of their own time. They drew the line, however, whenever it was suggested that we schedule additional training days and hire substitutes to permit teachers to participate during the school day. This underscores the importance of specificity in the teacher recruitment phase. One of the things teachers need to know is how much time they will be away from their classrooms.

The November seminars were a very useful training experience for teachers. By being held after school, we avoided teacher reluctance to leave their classrooms and at the same time, incurred no financial costs. Finding the "best" afternoon, however, proved futile. We set the meeting for the day that most people could attend and apologized to the rest.

The afterschool seminars proved extremely satisfactory. Teachers met in small groups with experts in their field to discuss and select content and concepts that are important for students to learn. One seminar was conducted in each of four topic areas: transportation, pollution, plant and animal relationships, and recycling.

On-site training: Throughout the first year the staff members made several visits to teachers in their classrooms. The purpose of these visits was to give reinforcement and assistance and to provide resource materials. Many of the on-site visits were made at the request of the project teacher to secure specialized help or to demonstrate a particular lesson or activity.

Year II

Summer Institute

A series of three workshops were held late in August to prepare teachers for their new roles as workshop leaders. As in the first year's summer institutes, stipends were paid to participants. The sessions focused on the needs of the project teachers; specifically on the skills and strategies required to plan, organize, and conduct workshops in environmental education.

The project managers identified four components that should be present in each workshop: (1) definition of environmental education and rationale statement for why it should be included in the curriculum; (2) activities to be demonstrated and shared with workshop participants; (3) the organization and pacing of the workshop and (4) an evaluation or feedback mechanism. The three-day sessions were intended to help teachers design workshops that included these components.

Much attention was given to the importance of developing a personal definition and rationale for environmental education. To get this process underway, the project managers wrote their own personal statement (see appendix). Many of the teachers used this statement as a starting place for developing their own. As teachers began to structure their workshops they were encouraged to include their definition among introductory remarks and/or materials. This would give their audiences a conceptual framework within which to place the workshop activities that were to follow.

The activities component was to come directly from the teachers' own experiences in the classrooms. The previous year's mini-units were the resource

from which activities were drawn. There was no dearth of activities, lessons, and materials; the challenge was in selecting the ones most appropriate for workshop presentation.

Planning the organization and pacing of the workshop was an area in which teachers indicated the greatest need for help. The project managers arranged for the Director of the system's Inservice Center to present a session on how to conduct an effective workshop. This very valuable session focused on verbal communications, non-verbal communications, organizing a workshop, planning the delivery, and assessing how well the message is communicated.

The evaluation and feedback component consisted of two parts: (1) evaluation of the workshop by participants and (2) evaluation by non-participant observers. In each case, the instrument to be used was the one adopted by the system's Inservice Center. This instrument consisted of eight questions to be rated on a scale of 1-7. The questions dealt with organization, clarity of objectives, work of the presentor, ideas and activities presented, scope, utility, desire for additional information and overall effectiveness.

About half of the three-day institute was spent on giving teachers background on the four components of the workshop. The rest of the time was spent on planning.

The first step in the planning was for teachers to select themselves into teams. Four teams were formed: three teams had three members; one team had two. We had given teachers the option of working alone. No one expressed the desire to do so. Later in the project, one of the teams made a decision to

split up and work as solos.

Once the teams were constituted, they were given a large block of time -- one whole afternoon of the institute -- to begin their planning. They were told to return for the third and final day of the institute with an outline of the workshop they wished to present and to be able to demonstrate their introduction and activities. They were informed that a video-tape machine would be used as a way to receive feedback about their delivery.

On the third day of the institute, all of the groups were ready with an outline; not one group, however, wanted to demonstrate anything before the rest of us. Mostly, the teachers wanted to sit in their seats and talk about what they had planned to do. The project managers insisted, however, that all groups role-play their introduction and some of their activities. Further, they insisted that some of this be done on camera. Despite their initial balking, the teachers reported that role-playing their workshops and having the feedback provided by video-tape proved to be very beneficial. It gave them a great deal of insight as to the areas that needed improvement.

Follow-up workshop and meetings: One follow-up workshop was held during the second year of the project. On a system-wide inservice day in mid-September teachers met to role-play their workshops -- again using video-tape, turn over to the project managers any materials they needed reproduced or requested from consortium members, and polish their presentations.

Their first venture into the real thing was to occur a month later with each group giving a half-day workshop as part of a system-wide inservice day.

Three of the four groups presented workshops that day. One group was cancelled because of an insufficient number of sign-ups. All workshops were held during the morning. All workshops were evaluated by attendees and non-participant observers. The non-participant observers were recruited from the consortium.

In addition to attending the morning workshops, the consortium members shared their observations in an afternoon session when the total group of project teachers met to debrief. The debriefing consisted of reviewing the evaluation instruments filled out by workshop attendees and non-participant observers. These instruments provided data which teachers analyzed, compared, and discussed in preparation for their next workshops.

No further formal training sessions were held for project teachers. A few afterschool meetings of the entire group were held to attend to project business, solicit feedback on the writing of the guide, and disseminate materials.

On-site training: The project managers continued to make regular visits to teachers in their classrooms to give assistance and reinforcement and to provide resource materials. Some of these visits were arranged to coincide with scheduled free periods so that the project manager could help with individual planning of workshop activities.

Small group training: Throughout the year, the project managers met with the individual teams a few days before each workshop presentation. The purpose of these meetings was to assist on planning and to doublecheck that a sufficient supply of materials had been assembled. The reason that this individualized planning was required is that the workshop outlets turned out to be

vastly different in the amount of time provided. The Inservice Center, for example, gave the group a full day for presenting a workshop; the Harris-Stowe Teacher Center allowed two hours for an afterschool workshop. All the groups were prepared for a full day presentation. Some planning was required to scale down to two hours.

In addition to the pre-workshop meetings, the project managers met with the individual groups after their sessions to review and analyze the evaluation instruments.

D. Integrating Environmental Education into the Curriculum

1. The mini-unit. The vehicle through which teachers provided learning experiences to their students was the mini-unit. Each project teacher made a written contract with the project to develop and teach at least two mini-units over the course of the school year. The topic and length of the unit was left to the individual discretion of the project teachers. All teachers were required to make a written record of the objectives and activities of their mini-units and identify resources that were utilized. Also, in each case, teachers were to include mechanisms for assessing whether the objectives were achieved.

In developing their mini-units, project teachers learned to integrate environmental education into several areas of the curriculum - language arts, social studies, science, art, career education. Specific topics of study include: plant and animal relationships, ecology, energy, air and water pollution, solid waste disposal, transportation and conservation.

Several project teachers combined environmental education with the development of language arts skills. This is an important curriculum objective in the St. Louis Public Schools, and project teachers were very creative in devising ways to increase environmental awareness while focusing on language arts objectives. In some schools, students produced and performed plays with environmental themes.

On project teacher had her pupils write a book about the neighborhood where they lived. Students examined their surroundings with a critical eye, noting such physical attributes as the number of trees and other plants, air

quality, open space and litter. They also studied the social aspects of their neighborhoods -- the age range and occupations of residents and their recreational activities. To gain an historical perspective about their neighborhoods, students collected oral histories from older residents. Transcriptions of parts of these interviews were included in the students' book to contrast neighborhood conditions of past and present. This project not only stimulated environmental awareness, it also achieved objectives in language and writing skills, career education and research methods.

One teacher linked the environmental program to another project in her school -- a project sponsored by the Education Confederation and funded by the Arts and Education Council -- to encourage the integration of art into the school curriculum. Students produced a puppet show about the effects of air pollution. The children were responsible for making the puppets, constructing the set and performing the play. Another teacher stressed the idea that people and animals must interact with the environment in order to survive. While she was teaching a three-week unit on the ways that humans fashion homes in response to their environment, St. Louis received 23 inches of snow. She incorporated this environmental coincidence into the study unit, giving students a chance to learn from it. Students "played Eskimo" and built an igloo. They discovered how Eskimos adapted the igloo to the requirements of the environment and used resources. This led to a study of how Eskimos dress in the polar environment and where they get food, water, clothing and other necessities.

One teacher focused her students' attention on community service as an

important aspect of environmental education. Students were encouraged to take responsibility for the environmental quality of their neighborhoods by cleaning up litter and putting pressure on city hall to improve trash pickups and street repairs. The teacher provided a model for students by organizing a school-wide environmental committee of teachers who are promoting neighborhood cleanup. This committee organized parents' meetings, arranged for speakers and films, and enlisted parent support and involvement in the community service activities of the students.

2. The mini-course and the workshop: Project teachers became trainers of other teachers by conducting mini-courses and workshops for other teachers in the school system. In essence, these consisted of the following components: a definition of environmental education, a rationale for the need for environmental education in the classroom, and some tested activities for integrating environmental education into the curriculum and utilizing community resources.

All of the activities presented were used by project teachers in their own classrooms. One of the valuable outcomes of this is that much information was transmitted about how to locate certain resources and information, how to secure transportation and other needs, and how to make the most effective use of available materials. In several instances, the workshops and mini-courses became sharing and brainstorming sessions where project teachers, along with their colleagues in the school system, thought of new and interesting ways to make use of community resources and expanded on ways to weave environmental education into the curriculum.

E. Communication

The point has been made earlier that the partnership between the St. Louis Public Schools and the Missouri Botanical Garden is the foundation upon which our model is based. Further, that this partnership is based upon a mutual interest in and commitment to environmental education. In the early days of the model's development, the project staff recognized the importance of communication -- both formal and informal -- if the spirit of mutuality was to continue and the partnership to flourish. To assure that such communication took place, the staff designed a plan that included the following areas:

1. Staff communication: Because the staff of the Environmental Education Teacher Training Project were affiliated with two institutions, their offices were also in two institutions. Care had to be given to communication and all project staff came to assume individual responsibility for keeping the rest of the staff informed. Project meetings were scheduled on a regular basis as a way of designing a formal structure for communication. Informal communication took place through telephone calls, working jointly on several areas of the programs, and cultivating a partner relationship among all staff.

As the project progressed, there was no clear line of demarcation between the Garden's share of the project and the school system's share. While we never lost sight of our respective institutional goals and responsibilities, inside the project we were all working together toward a common goal. Tasks were assigned on the basis of sharing responsibility for meeting deadlines,

not on the basis of which institution should handle a particular area. This kind of sharing required staff communication and also stimulated it. Working together on a joint project is a most effective way to assure that people will talk to one another.

2. Communication with project teachers and consortium: This area posed some problems for project staff. We were not immediately aware that teachers and consortium members had not conceptualized the project as we did. Initially, the teachers felt comfortable communicating with the school project staff and the community people seemed to favor the Garden staff. It is understandable how this came about, for initially the project staff itself did not fully comprehend the complexities of the institutional partnership. We began to suspect that part of the problem had to do with the manner in which we prepared written communications to teachers and community people. Generally, notes to teachers were sent on school system letterhead; notes to community people on Missouri Botanical Garden stationery. It might have been helpful at the beginning to design stationery which reflected the partnership of the project.

Three months into the project, we began a newsletter and designed a project masthead with the names and phone numbers of both institutions and project staff names. This became a graphic reinforcement of the cooperative nature of the project.

The Newsletter provided a mechanism for teachers to communicate with each other. With the exception of a few training sessions and meetings, teachers had few opportunities to share their experiences with one another. The News-

letter offered such a forum. Although originally intended for teachers, we also distributed the Newsletter to cooperating community organizations and interested parties within our own institutions as a way of disseminating information about project activities.

3. Communication within project institutions: The project staff was sensitive to the need for communication within our respective institutions. If the partnership was to be successful, in a teacher training capacity, it would need the continued support of both institutions.

We held two large meetings during the first year of the project -- one in December and the other in May -- as a way of informing people within our institutions about the progress of the project. We invited teachers, community people, school system administrators, and Garden personnel. The meetings were held at the Missouri Botanical Garden and coincided with social functions to which the public was invited. At the conclusion of each meeting, participants were invited to attend the public event. Thus, the meetings had an informal social function and were not strictly utilitarian. At the conclusion of the project, a similar meeting was held, again combining a social activity with an informational function.

Another mechanism for communicating within our respective institutions was to submit articles and photographs to our respective public relations departments for inclusion in house publications. Keeping the public relations people informed of scheduled events, interesting activities, and especially the presentation of papers and awards proved to be very effective methods of keeping our project visible in our respective house publications.

During the second year of the project, we increased our communication efforts within the school system. This was done in order to stimulate interest among teachers in the system to attend workshops offered by project teachers. A schedule of workshops offered by project teachers was published in the school system's newspaper and flyers were sent to school principals. Also, the project managers made presentations at the regularly-scheduled curriculum meetings held monthly throughout the system. These special efforts were made in addition to the regular inservice recruitment efforts employed in the system.

4. Communication with other institutions: To accomplish this kind of communication, the project staff relied heavily upon meetings of the community resource representatives and written letters and reports of project activities. The project staff attempted also to communicate with institutions and agencies outside the St. Louis area; e.g., statewide and national groups. Within Missouri, the project staff communicated with the Missouri Department of Education and included in all dissemination activities the Commissioner of Education and other Department personnel who had an interest in environmental education. Staff members served on statewide committees and through this work, established personal contact with others who have a commitment to environmental education.

Sharing information on a national basis consisted of presenting papers at professional meetings, writing articles for national publications, and participating in the ERIC/SMEAC network.

F. Evaluation

The project staff in consultation with members of the St. Louis Public Schools Division of Evaluation designed an evaluation scheme that could be implemented largely by the staff itself. The purpose of the evaluation in the first year was to provide guidance to the project staff in designing the training program. The criteria upon which the evaluation were based came out of the identified needs of the project teachers. The validity of the evaluation was determined by how appropr ate the project activities were in terms of meeting the identified needs of project teachers. In addition to assessing the relationship of activities to needs, the evaluation was used to formulate specific objectives to carry out the project's main goals. Throughout the first year, the staff collected data to provide needs assessment and a formative evaluation of the training activities. Data was collected at the conclusion of each training session and analyzed to provide input needs and activities for succeeding sessions. Thus, project teachers were actively involved in designing the training program. They made input into identifying their needs, then assessed the effectiveness of particular activities in meeting those needs. The program was then revised in light of that assessment.

During the first year, two kinds of evaluation activities were conducted: formative and summative. The formative evaluation was conducted by the project staff and included the following:

(1) teacher evaluation of each training session using an instrument which

assessed applicability of content, clarity of objectives, audience participation, value of materials, relevancy to needs

(2) classroom observations of project teachers by project managers

(3) evaluation by project staff of the mini-units.

The summative evaluation consisted of personal indepth interviews held with each of the project teachers at the close of the first year. The staff felt that this task was one that should not be done by the project managers since it was they who had been most involved with the project teachers. The consortium was called on for assistance. A meeting was held to explain that the purpose of the interview was to obtain an honest assessment from teachers about the training program and its effectiveness in preparing them for their participation in the project. Volunteers were recruited to visit each of the project teachers in the classroom and conduct the evaluation interviews.

Many people in the consortium have little opportunity to visit with a teacher in the classroom and welcomed the opportunity to have a legitimate function to perform in this setting. With few exceptions, the data gatherers came away with a renewed feeling of respect and concern for the classroom teachers.

During the second year of the project, the purpose of the evaluation activities was to give project teachers feedback on their effectiveness as workshop leaders. As mentioned earlier, this consisted of collecting data from workshop attendees at the conclusion of each workshop. This information was reviewed and analyzed so that any weak areas could be improved.

CONCLUSION

It is the feeling of the staff and the teacher participants that the Environmental Education Teacher Training Project successfully met the goals set forth in the original proposal.

1. A very close working relationship was established between the St. Louis School System and the Missouri Botanical Garden. This partnership resulted in several other enterprises which were mutually advantageous.

2. The establishment of a consortium of community resources provided a broader base of input. Personnel from a wide variety of community institutions worked closely with the staff and teachers. The positive feelings generated by the cooperative venture resulted in plans to continue the consortium.

3. A cadre of teacher trainers have been trained and plans have been made to utilize their expertise in a variety of ways for the forthcoming school year.

4. Some of the mini-units and other activities developed by the teacher trainers are already being utilized by non-project teachers in their classroom programs. Plans are being formulated to incorporate some of the activities generated by this project for the middle grades science curriculum, tentatively scheduled for revision during the summer of 1979.

The Environmental Education Teacher Training Project was an exciting experience which allowed for the development of a viable model of teacher training through a cooperative program between the St. Louis Public Schools and the Missouri Botanical Garden.

APPENDIX

Missouri Botanical Garden

The St. Louis Public Schools in cooperation with the Missouri Botanical Garden has received a grant from the U.S. Office of Environmental Education to conduct a one-year training program in environmental education to improve teacher skills in curriculum development and inservice personnel development activities. The intent of the program is to train teachers to develop classroom activities that will give children in grades 4, 5, and 6 a comprehensive understanding of the environment. As part of their training, teachers will learn to identify, locate, and utilize resources of local institutions.

To facilitate this aspect of the program, the Missouri Botanical Garden is organizing an ad hoc inter-institutional consortium for environmental education. This consortium will represent a pool of institutional resources that can be integrated into environmental education programs in the St. Louis Public Schools, as well as other school systems in the metropolitan area.

An initial meeting of the consortium has been scheduled for August 5, 1976, 9:00 a.m. to 12:00 noon, in the Green Room of the Lehmann Building, Missouri Botanical Garden, 2345 Tower Grove Avenue. At this meeting we will begin to identify the institutional resources of the St. Louis community and explore ways that they can be utilized in environmental education programs. Further meetings are planned on a bi-monthly basis during the coming school year.

I would like to invite your participation in the consortium and hope that you can attend the first meeting. Please call Calla Smorodin, 772-7600, Ext. 62, to indicate whether your institution will be represented at the August 5 meeting.

Sincerely,

Bill Klein

William M. Klein
Assistant Director

WMK/at

Office of the Director

2315 Tower Grove Avenue
St. Louis, Missouri 63110
Tel: 314 865-0440

New Tel: 314 772-7600

CONSORTIUM FOR ENVIRONMENTAL EDUCATION

Active Participants

American Lung Association of Eastern Missouri
St. Louis Art Museum
Women's Architectural League
Cahokia Mounds Museum
Cemrel
Coaltion for the Environment
Committee for Environmental Information
Environment Magazine
Community Development Agency
Department of Parks, Recreation & Forestry
East-West Gateway Coordinating Council
Landmarks Association
Missouri Historical Society
Missouri Natural Area Survey
St. Louis University
The Learning Center
McDonnell Planetarium
Missouri Department of Conservation
Missouri Soil & Water District Commission
National Park Service
St. Louis Public Library
St. Louis Zoo
Sierra Club - Ozark Chapter
Soil Conservation Service
U.S. Army Corps of Engineers - St. Louis District
U.S. Environmental Protection Agency/
Regional Air Pollution Study
Washington University

Please Post

GOO 7601997

FOR TEACHERS OF GRADES 4, 5, AND 6 . . . . . .

A TEACHER TRAINING PROGRAM IN

ENVIRONMENTAL EDUCATION

The St. Louis Public Schools, in cooperation with the Missouri Botanical Garden, has received a grant from the U.S. Office of Environmental Education to conduct a one-year training project to develop teacher skills in curriculum development and inservice personnel development activities. Twenty St. Louis teachers of Grades 4, 5, and 6 will be selected to participate as project teachers.

The training program will focus on the multi-disciplinary and multi-process aspects of environmental education:

a. The basic concepts of environmental education.

b. The variables to be identified in the assessment of environmental problems.

c. The factors to be considered in valuing alternative solutions in efforts to achieve an environmental quality with which people can live.

As a result of their training, project teachers will be expected to have the following kind of involvement with the program:

a. To provide input in the development of mini-units in urban environmental problems.

b. To teach the mini-units during the school year in their regular classrooms.

c. To provide evaluation and feedback on the effectiveness of the mini-units.

d. To work with project staff to develop an inservice personnel development program for teachers in the middle (4-6) grades.

SUMMER ACTIVITIES FOR PROJECT TEACHERS

JULY 16 - AUGUST 18, 1976: Review of training materials to be prepared by project staff.

AUGUST 18 - AUGUST 26, 1976: Daily training sessions at the Missouri Botanical Garden. Stipends will be paid for 8 training days.

ACTIVITIES DURING THE SCHOOL YEAR

Project teachers will teach the mini-units in their own classrooms during the school year. In addition, they will receive released time to attend three workshops to provide input, evaluation, and feedback and to assist in the development of teacher training procedures. One of the workshops will be held on the regularly-scheduled inservice day in March, 1977. All workshops will be held in St. Louis. Project staff will visit the classrooms of project teachers regularly during the school year.

WHO MAY APPLY?

Regular classroom teachers of Grades 4, 5, and 6 employed in the St. Louis Public Schools. An attempt will be made to ensure equitable participation among the system's five sub-districts. For further information, contact:

ED ORTLEB, Project Co-Director
Science Supervisor
O'Fallon Technical Center, Room 326
5101 McRee Avenue, 63110
Telephone: 771-4336

APPLICATION

GOO 7601997

Environmental Education Training Program
for Elementary School Teachers

Funded by the U.S. Office of Education - Environmental Education Act P.L. 91-516

I. GENERAL INFORMATION

Name_____ Phone_____

Address_____ State_____ Zip_____

Social Security Number_____ Date of Birth_____

School now teaching_____ District_____

Grade taught_____

II. EDUCATIONAL PREPARATION

Degree, School, City Major Minor

_____

_____

_____

III. TEACHING EXPERIENCE

Name of School Subjects Taught Dates

_____

_____

_____

IV. RELATED EXPERIENCES (other positions, campwork, workshops, etc.)

_____

_____

_____

Each applicant is asked to attach a letter which includes specific reasons for applying to this program, any experience in this area, and a brief statement of your teaching philosophy.

Return by June 11, 1976 to:
Science Office
[illegible]01 McRee Ave.
St. Louis, MO 63110

_____
Signature of applicant

ENVIRONMENTAL EDUCATION TRAINING PROJECT

Agenda for Workshop Activities

WEDNESDAY, AUGUST 25

9:00-10:00 Introduction - Peggy Rustige, Project Manager,
St. Louis Public Schools
Calla Smorodin, Project Manager,
Missouri Botanical Garden

10:00-12:00 The Substantive Structure of Environmental Education --
A Conceptualization
Dr. Gary Harvey, Education Consultant,
Missouri Department of Conservation

12:00- 1:00 Lunch

1:00- 3:00 Discussion: What is Environmental Education?
Peggy Rustige and Calla Smorodin

THURSDAY, AUGUST 26

9:00-12:00 Acclimitization
David Goudy, Superintendent, Shaw Arboretum;
Trainer, Acclimitization Experiences Institute

12:00- 3:00 Acclimitization (continued)

FRIDAY, AUGUST 27

9:00-12:00 The Environmentally Integrated Curriculum
Dr. Gary Harvey

12:00- 1:00 Lunch

1:-0- 3:00 Environmentally Integrated Curriculum (continued)

MONDAY, AUGUST 30

9:00-12:00 Simulation: "They Shoot Marbles, Don't They?"
Earl Mulley, Center for Simulation Studies

12:00- 1:00 Lunch

1:00- 3:00 Discussion: Peggy Rustige and Calla Smorodin

TUESDAY, AUGUST 31

9:00-12:00 Resources for Teachers in the St. Louis Community
Calla Smorodin, Peggy Rustige
Evelyn McWilliams, American Lung Association
Ray Breun, St. Louis Art Museum
Suzanne McNamara, Missouri Botanical Garden
Jack Woodhead, Missouri Department of Conservation

12:00- 1:00 Lunch

1:00- 3:00 Governmental Resources and Procedures Regarding Environmental Issues (including environmental impact statement procedures)
Dr. David Bedan, Coalition for the Environment

WEDNESDAY, SEPTEMBER 1

9:00-12:00 The Meramec Dam Controversy: A Case Study in Governmental Decision-making
Dr. David Bedan

12:00- 1:00 Lunch

1:00- 3:00 Values and Their Relationship to Environmental Decision-making
Dr. Ted Smorodin, Project Values,
St. Louis University

THURSDAY, SEPTEMBER 2

9:00-12:00 Schoolyard Ecology
Ed Ortleb, Science Curriculum Specialist,
St. Louis Public Schools

12:00- 1:00 Lunch

1:00- 3:00 Wrap-up Discussion - Ed Ortleb
Calla Smorodin
Peggy Rustige

SAINT LOUIS PUBLIC SCHOOLS

Missouri Botanical Garden

ENVIRONMENTAL EDUCATION TRAINING PROJECT

ENVIRONMENTAL EDUCATION: A PERSPECTIVE

What is environmental education?

The definitions of environmental education are many and varied. Because this is the case, it is important for educators working in this field to search for their own personal definition and to be able to state it to others.

In the Environmental Education Training Project, we began our search for a definition by taking a look at the desired student outcomes. We asked ourselves, "What kind of person do we want our students to be when they assume their full duties as citizens? What is important for the student to know in order to function as a responsible member of society?" In addition to reading, writing, arithmetic and other skills, we believe it is important for students to have certain skills, attitudes, and knowledge that will help to promote and sustain human life on this planet.

Thus, our definition of environmental education has to do with <u>management of resources</u>. It is our job as educators to help children learn that human life depends on our ability to manage the earth's resources and that it is to our advantage to learn to manage them well.

With this as a main goal of environmental education, we can begin early in the student's formal schooling to build a foundation of knowledge and attitudes that will enable the student later to comprehend and learn a more complex set of skills necessary for wise environmental decisionmaking. Before students can understand the concept of managing resources, they must first have some knowledge and awareness of what natural resources are and that they are all inter-related. Secondly, they must come to understand that all life is absolutely dependent upon solar action and further that human life is totally dependent upon plant life.

Peggy Rustige
Project Manager
St. Louis Public Schools

Calla Smorodin
Project Manager
Missouri Botanical Garden